

The University of Maine

DigitalCommons@UMaine

Wild Blueberry Research Reports

Wild Blueberry Research

4-1976

Blueberry Research Progress Report

Howard Y. Forsythe Jr

Amr A. Ismail

Said A. Goueli

Paul R. Hepler

Arlen D. Draper

See next page for additional authors

Follow this and additional works at: https://digitalcommons.library.umaine.edu/blueberry_resreports



Part of the [Agricultural Science Commons](#), [Agriculture Commons](#), [Agronomy and Crop Sciences Commons](#), [Entomology Commons](#), [Food Processing Commons](#), [Fruit Science Commons](#), [Plant Biology Commons](#), and the [Weed Science Commons](#)

This Report is brought to you for free and open access by DigitalCommons@UMaine. It has been accepted for inclusion in Wild Blueberry Research Reports by an authorized administrator of DigitalCommons@UMaine. For more information, please contact um.library.technical.services@maine.edu.

Authors

Howard Y. Forsythe Jr, Amr A. Ismail, Said A. Goueli, Paul R. Hepler, Arlen D. Draper, John M. Smagula, Stewart Goltz, Alan Langille, Thomas E. Christensen, Homer B. Metzger, and Ruth H. True

1976

BLUEBERRY RESEARCH PROGRESS REPORT

Life Sciences and Agriculture Experiment Station

Prepared for the Blueberry Advisory Committee, April 8, 1976

Page No.

OUTLINE OF RESEARCH REPORT

1. Insects Affecting the Blueberry
3. Weed Control in Blueberry Fields
5. Pruning of Blueberries
6. Integrated Management of Blueberry Fields
7. Selective Thinning of Black Barrenberries in Lowbush Blueberry Fields with Ethrel
8. The Physiology and Biochemistry of the Development of the Lowbush Blueberry Fruit
9. The Development of Blueberry Varieties Adapted to Maine
11. Factors Regulating Rhizome Initiation and Development in the Lowbush Blueberry
13. Mechanical Blueberry Harvesting
15. Blueberry Marketing and Cost Analysis of Producing Blueberries
17. New Food Products and Service

INSECTS AFFECTING THE BLUEBERRY

Personnel:

Howard Y. Forsythe, Jr.

Mission of project:

Protect blueberry crop from loss due to insects.

Specific objectives:

- (a) To find more effective and less hazardous insecticides which are less damaging to the environment.
- (b) To determine the feasibility of utilizing trapping methods to monitor for blueberry maggot fly activity.
- (c) To study biology, ecology, and behavior of blueberry pests as necessary for development of control measures.

Status of current research:

Continued testing of insecticides and maggot fly traps is still essential to determine their performance under various environmental conditions. The registration status of some potential insecticide recommendations is poor. Locating insect-infested fields may be a limiting factor for all research in 1976. See attached chart of registration status of insecticides for Blueberry pests.

Significant research accomplishment:

Trithion dust has been registered for control of blueberry maggot. This is an excellent insecticide which is less toxic to native bees. No maggot control data were obtained in 1975 due to the almost complete absence of maggots in the berries in the test fields. Timing of insecticide applications was critical in control of blueberry thrips, and very good control was obtained with several materials when applied at $\frac{1}{4}$ and $\frac{1}{2}$ inch stem height.

Impact of Research:

Control of insect damage is essential for the commercial production of blueberries. Before new insecticides can be registered for use, the materials must be tested for method, rate and time of application, control effectiveness, residue and environmental hazards, effect on production and quality. Current insecticide recommendations are the result of previous research.

Research Plans:

Minor Pests: Search for infestations of insect pests that represent a potential hazard to blueberry production. When found, appropriate materials for control will be tested.

Blueberry Maggot: The following materials will be tested for efficacy, time, and number of applications:

<u>Aerial Application</u>	<u>Ground Application</u>
Malathion ULV(Cythion)+Sticker	MesuroI
Sevin - new formulation	Diazinon
Trithion - rate of application	Imidan
Dylox - if available from manufacturer	
Imidan - efficacy	

Thrips: The following materials will be tested:
Diazinon, Trithion, Malathion, Imidan

Insect traps: Continue testing maggot fly traps to determine critical populations, when and if insecticide applications should be made.

REGISTRATION STATUS OF INSECTICIDES TO CONTROL
BLUEBERRY PESTS

Insect Pest	Materials Labelled for use in Blueberries					
	Sevin	Malathion	Methoxychlor	Diazinon	Guthion	Other
<u>Blueberry pests:</u>						
Blueberry maggot	X	X	X	X	X	Trithion
Blueberry thrips				X		Dieldrin
Japanese beetle	X	X				
Cranberry fruitworm	X	X	X	X	X	
Cherry fruitworm	X	X	X	X		
Leafhoppers			X			
Plum curculio		X	X		X	
Sharp-nosed leafhopper		X				
Aphids				X		
Two-spotted mite				X		
European fruit lecanium	X					X
Leaf miner						X

Materials not labelled for Blueberries but Approved
for Other Crops
(Efficacy data needed for registration on blueberries)

Labelled for Cranberries

Black-headed fireworm		X		X		
Flea beetles			X			
Leaf beetles			X			
Cranberry fireworm	X				X	
Cutworms	X					

Labelled for Other Food Crops

Army & cutworms	X		X	X		
Flea and leaf beetles	X			X	X	

WEED CONTROL IN BLUEBERRY FIELDS

Personnel:

Amr A. Ismail, Plant and Soil Sciences

Mission of Project:

To improve blueberry production and facilitate harvesting by developing new or improved methods of controlling weeds in blueberry fields.

Specific Objectives:

1. Evaluate herbicide materials for the control of grasses, sedges and flowering herbaceous weeds.
2. Evaluate herbicide materials for the control of woody weeds (lambkill, poplar, barrenberry, etc.), with emphasis on barrenberry control.
3. Develop equipment and methods for application of herbicides for selective or general control of various weed species in blueberry fields.

Status of Current Research:

1. Three years of research with Terbacil (Sinbar) and a Terbacil and diuron (Karmex) mix (Zobar) showed these materials to be effective in controlling grasses, sedges in lowbush blueberry fields and to significantly increase yield ease of harvesting. DuPont has requested EPA for label approval for Terbacil use on blueberries. The label is expected to be issued in 1976. Terbacil or Terbacil and diuron could be applied by ground or air application equipment. Devrinol (fall application) was not effective in controlling weeds in blueberry fields.
2. Round up was found to be effective in controlling practically all vegetation present in blueberry fields. Of great interest is its effectiveness in controlling barrenberry plants. This could be very effective if a method can be developed to apply material selectively without injury to blueberries.
3. A segmented weed roller, for selective application of herbicides, that uses an intermitting feeding system and a weed sensing device was designed, constructed and evaluated during the past two years. The roller could selectively apply an herbicide to plants taller than the blueberry plants. The new design facilitates closer adaptation to the contour of the land, thus, reducing injury to blueberry plants (on nolls); better drip control; considerably finer adjustments and better herbicide holding capacity on the revolving heads. A commercial size unit (9' 10" wide with 5 heads) is being constructed at Blueberry Hill Farm and will be available for field evaluation and demonstration this summer.
4. A system for barrenberry control has been proposed. The system utilizes high levels of fertility that cause differential height between barrenberry and blueberry stems, followed by selective application of herbicides using the improved roller. Preliminary evaluation of the system was very promising. This procedure is also effective for controlling other woody weeds.

Impact of Research:

This research provides essential information on the ability of certain herbicides to control specific weeds, and the effect on blueberry plants.

Blueberry growers will benefit by being able to control certain weeds in blueberry fields and improve their productivity, increase ease of harvest and improve the quality of the blueberry pack. The consumer should benefit by having larger quantities of better grade blueberries available (hopefully) at a lower price.

Research Plans for 1976:

1. Evaluation of terbacil, and terbacil in combination with diuron: Plots will be established with several fertility levels at different locations in the State. The effectiveness of these treatments under different field conditions (soil types, weed population, blueberry plant stand, moisture, etc.) will be determined.
- ✓ 2. Barrenberry Control: Emphasis in 1976 will be placed on evaluation of the effects of two herbicides (roundup and 2,4-D) on barrenberry control utilizing the newly developed roller in conjunction with high level of fertility to achieve additional height differential between barrenberry and blueberry stems. The effect of these herbicide treatments on other woody weeds will also be studied.
- ✓ 3. Barrenberry plants propagated in 1974 and 1975 will be transplanted into field plots in the spring of 1976. Greenhouse studies will be conducted in the fall and winter of 1976 to determine growth habits and response to herbicide.
- ✓ 4. Lambkill Control: Comparison of Roundup and 2,4-D at various rates and dates of application.

PRUNING OF BLUEBERRIES

Personnel:

Amr A. Ismail

Mission of Project:

To improve blueberry production, reduce energy consumption and pruning costs.

Specific Objectives:

1. Evaluate the effectiveness of various pruning methods (mechanical, thermal, chemical and electric) and time (fall and spring).
2. Determine the optimum method and frequency of pruning under various fertility and weed control treatments.

Status of Current Research:

Completed three years out of a five-year duration of the project. Underway are experiments to:

1. Determine and compare the effectiveness of burning (with oil and straw) and mowing in the fall or spring in combination with herbicide (terbacil) and fertility treatments.
2. Evaluate the effectiveness of electric shock as a pruning method. Compare electric treatment with burning and mowing for pruning.

Significant Research Accomplishment:

Burning is currently the most practical method of pruning blueberries but is costly and destructive of the organic material in the soil.

Impact of Research:

This research provides information on the effectiveness and practicality of various pruning methods. With proposed changes in management practices (particularly in weed control and fertility), it may be possible to reduce the frequency of burning (every 3 years) or substitute another method for pruning.

Research Plans for 1976:

1. Evaluate the effect of thermal and mechanical pruning treatments (burn vs. mow & fall vs. spring) initiated in 1974 on blueberry yield.
2. Evaluate the effect of electric shock treatments applied in 1975 on blueberry growth. Compare the effects of these treatments to those of burning and mowing on blueberry growth and potential productivity.

INTEGRATED MANAGEMENT OF
BLUEBERRY FIELDS

Personnel:

Amr A. Ismail

Mission of Project:

Develop an integrated program that will combine cultural practices to achieve maximum yield of blueberries with decreased cost per pound.

Specific Objectives:

1. To evaluate various combinations of weed control and fertility practices along with irrigation, pest management, honey bees for pollination. The goal is to increase first crop production and possibly to produce an economical second year crop.
2. To identify cultural practices that encourage plant establishment and spread to increase plant stand.
3. To identify and establish plant growth habits and field conditions that will facilitate ease of mechanical harvesting.

Status of Current Research:

Plots have been established during the past two years. Several years more will be needed to evaluate and determine the most desirable combinations of treatments and practices under different conditions (weather, fields, plants, etc.).

Significant Research Accomplishment:

Procedure for controlling certain weeds in blueberry fields under different fertility management has been identified. Effective weed control has been shown to be essential before a progressive fertility program may be adopted.

Impact of Research:

If a combination of chemical weed control, improved fertility and other practices can be proved effective, there should be a substantial increase in the yields per acre and a corresponding decrease in the cost per pound for producing and harvesting blueberries.

Research Plans for 1976:

1. Evaluate the weed control - fertility plots initiated in 1973 to determine the carry-over effect of herbicide and fertilizer applications.
2. Initiate additional plots to study the effectiveness of herbicide treatments under different fertility levels. Three years are needed to obtain and evaluate a second year crop.
3. Establish management areas (at 3-5 locations) where herbaceous weeds will be controlled, fertilizer applied and insects and diseases will be managed according to the latest research findings.

SELECTIVE THINNING OF BLACK BARRENBERRIES IN
LOWBUSH BLUEBERRY FIELDS WITH ETHREL

Personnel:

Amr A. Ismail, Plant and Soil Sciences

Mission of Project:

Eliminate barrenberry fruit in blueberry fields.

Specific Objectives:

In late May EPA approved the use of Ethrel (Ethephon) on lowbush blueberry fields for selective thinning of black barrenberry fruits. A need was identified to:

1. Further investigate and demonstrate the effectiveness of Ethrel for barrenberry fruit thinning in blueberry fields.
2. To involve blueberry growers and industry representatives in the planning, application and evaluation of such treatment. To help them make decisions on the practicality and future use of this material as a management tool in their blueberry operation.

Status of Current Research:

The 1975 project was completed and met its objectives. No additional research is planned with Ethrel for selective thinning of black barrenberries.

Significant Research Accomplishment:

This was a continuation of four years program that led to label approval by EPA for this specific use of Ethrel. Ethrel at 1½ and 2 lb/A applied at 80-100% black barrenberry petal fall (ground and aerial application) effectively thinned black barrenberry fruits. In 1975 injury to blueberry leaves was evident. The phytotoxicity symptoms (reddening of the margins and tips of leaves) were not observed during previous 3 years of work with Ethrel on lowbush blueberries. The hot and dry conditions encountered during the summer of 1975 and the stress status of the plants was considered to be causes of the blueberries response to Ethrel treatments resulting in the injury noted.

Impact of Research:

Growers have acquired experience and knowledge concerning Ethrel's use for selective thinning of black barrenberries in blueberry fields. Returns to growers and processors will be significantly improved as barrenberries are eliminated from the crop and a greater percentage of blueberries passes for higher grades.

Research Plans for 1976:

No further research with Ethrel is planned in 1976. However, additional demonstration plots with spot treatment as well as total area treatment are planned in cooperation with interested growers.

THE PHYSIOLOGY AND BIOCHEMISTRY OF THE DEVELOPMENT
OF THE LOWBUSH BLUEBERRY FRUIT

Personnel:

Amr A. Ismail and Said A. Goueli

Mission of Project:

Provide basic knowledge of the physiology and biochemistry of the maturation and ripening of the blueberry fruit that will be used to develop cultural practices that will improve quality and productivity of blueberries.

Specific Objectives:

To determine changes in ethylene, free amino acids, protein nitrogen, soluble nitrogen, total nitrogen, anthocyanins, flavonols and sugars during the development of the fruit.

Status of Current Research:

Specific objectives of the projects have been met after three consecutive years of research. Further research in this area will be largely related to the effect of different cultural practices or specific treatments on the development and quality of the blueberry fruit.

Significant Research Accomplishment:

As blueberries began to ripen ethylene production increased until a maximum was reached, after which ethylene production decreased. This further confirmed that blueberry is a climacteric fruit. Fruit from different clones produced ethylene at different rates.

Fifteen amino acids were identified in the free amino acid pool of developing blueberries. During berry development eleven of these amino acids changed significantly. The levels of four amino acids did not vary as the berries developed. Total nitrogen, protein nitrogen, soluble nitrogen and total free amino acids decreased during fruit maturation.

If there were non-reducing sugars in developing lowbush blueberries their levels were too low to be detected by the procedure employed. Reducing sugars increased as the berries developed. Flavonols decreased and anthocyanins increased during berry development.

Impact of Research:

This research provided basic information that was not available in the literature. Better understanding of changes occurring during fruit maturation will enable researchers to determine desirable as well as undesirable treatments that may alter these patterns influencing fruit quality. It also could be used to determine optimum harvest date for maximum fruit quality, and to extend the harvest season.

Research Plans for 1976:

As applies to the effect of cultural and other treatments on fruit maturation and quality.

THE DEVELOPMENT OF BLUEBERRY VARIETIES
ADAPTED TO MAINE

Personnel:

Paul R. Hepler, Arlen D. Draper, and Amr A. Ismail

Mission of Project:

To develop blueberry varieties (low, high, and/or intermediate) adapted to Maine, and to develop horticultural practices necessary for the culture of planted blueberries.

Specific Objectives:

1. To develop vigorous lowbush varieties with improved winter-hardiness and good processing characteristics that could be used to either establish new plantings or improve the plant populations of native stands.
2. To evaluate blueberries of intermediate growth habit for processing production and develop suitable varieties.
3. To continue the development of winter-hardy highbush for the Market Garden and Home Garden primarily through the reevaluation of material already selected.
4. To improve methodology for evaluating winter injury as a predictive tool for the Industry and as a tool for evaluating breeding populations.

Status of Current Research:

Several horticulturally superior clones of both low and highbush blueberries have been identified. It is necessary to experimentally determine the heritable variability to winter injury among lowbush blueberries, *V. angustifolium*, and to combine the horticultural and hardiness qualities within a single cultivar. Out-cross populations from the Poplar Hill clones are being grown and should begin to give some information on the genetic variability for hardiness within lowbush blueberries. Traditional Pomology calls for clonal varieties, yet this precept is being challenged (independently by Hepler and Aalders) with the objective of seed reproduced lowbush varieties being suggested, but not adequately tested as yet.

Winter injury is currently evaluated by counting necrotic flower primordia in the fruit buds. This procedure has not been adequately correlated with actual flowering.

Significant Research Accomplishment:

Two varieties have been named and released. The first, "Augusta", is the first lowbush blueberry that has been named and released for commercial lowbush blueberry production (by New Brunswick and Maine). This variety is expected to play a prominent role in the production of lowbush blueberries and as a parent in future breeding work. The second variety, "Patriot", tested as MeUS-32, is a highbush variety with excellent quality and superior hardiness in relation to other named blueberry varieties. "Patriot" is expected to be of value as a market and home garden variety and is extremely valuable as a parent since it is the only commercial type highbush blueberry resistant to phytophthora root rot.

Research Plans for 1976:

It is planned to complete propagation of the 500 selections still available in the Jonesboro nurseries. A single 6 plant plot row of each is to be planted in Jonesboro and 2 plants of each in New Jersey. A polycross involving the 100 Poplar Hill clones will be made in 1976 with the seedlings being grown in 1977. Crosses involving "Augusta", Me4161, and other lowbush clones will also be made. A significant effort will also be expended to propagate "Augusta" to obtain sufficient plants for several large scale plantings. A study is currently under way to correlate necrosis of flower primordia and actual flower production under field condition\$

FACTORS REGULATING RHIZOME INITIATION AND
DEVELOPMENT IN THE LOWBUSH BLUEBERRY

Personnel:

Project Leader: - Dr. John M. Smagula
Cooperators: - Dr. Stewart Goltz, Dr. Paul Hepler,
Dr. Alan Langille

Mission of Project:

To develop an effective method of accelerating rhizome initiation and growth that will permit more intensive management and increased yields from natural and cultivated blueberry fields.

Specific Objectives:

- a. To develop a method for in vitro culturing of lowbush blueberry tissue.
- b. To investigate the role of growth regulators in rhizome initiation and development.
- c. To study the effect of soil temperature on rhizome initiation.
- d. To study nutritional responses of the lowbush blueberry related to growth habit, particularly rhizome production.
- e. To examine the feasibility of leaf-bud cuttings as a means of more efficiently propagating lowbush blueberry clones.

Status of Current Research:

- a. Shoot tip or meristem culture on two different media proved unsuccessful in regenerating aerial shoots or rhizomes. Different media and blueberry tissue combinations are being investigated.
- b. The study of the effect of growth regulators on rhizome initiation and development is dependent upon successful tissue culture.
- c. Study of the effect of soil temperature on rhizome initiation will be completed and results evaluated by July 1, 1976.
- d. Different levels of nitrogen content have been established in one year old rooted cuttings. These plants are being grown under greenhouse conditions favorable to rhizome initiation to determine the effect of N status on rhizome initiation. A second group of plants have received a second nitrogen treatment and will be evaluated after longer growth periods.
- e. A leaf-bud cutting experiment was initiated during the summer of 1975 in which the following factors were investigated: position on stem, physiological age, effect of rooting hormones. Callus formation and rooting was observed but buds did not grow to produce new shoots. A greenhouse propagation experiment has been initiated to continue this investigation.

Significant Research Accomplishment:

- a. Two tissue culture media have been screened and eliminated as sources for lowbush blueberry tissue culture.
- b. Statewide fertility studies (1974-75) indicated a positive correlation between N, P, K fertilization and plant uptake of N, P, K, Bo, Mn, and Zn. A negative correlation was found between fertility level and Mg content of the leaves.

This study also indicated the need for proper woody weed control prior to terbacil and fertilizer application.

- c. Comparison of urea and sulfur coated urea as nitrogen sources indicated essentially no difference in respect to plant response. Both resulted in increases in leaf size, leaf weight and leaf nitrogen content.

Increases in available soil nitrogen resulting from the treatments were predominantly in the $\text{NH}_4\text{-N}$ and not the $\text{NO}_3\text{-N}$ form. Significant increases were noted in the upper but not in the lower 3 inch depth. Nitrogen treatments resulted in significantly higher available $\text{NH}_4\text{-N}$ throughout the entire growing season and did not seem to be leached away from the plant root zone.

Impact of Research:

The development of a method to stimulate rhizome production will have significant influence on existing fields and newly planted fields. The slow spread of the lowbush blueberry is a major hurdle in the establishment of fields of high yielding clonal material.

Blueberry growers have been alerted to the need for woody weed control prior to application of terbacil and fertilizer, especially at the higher fertilizer rates.

Basic information on availability of nitrogen from urea application on sandy textured soils was provided.

Research Plans for 1976:

- a. Continue tissue culture studies.
- b. Field studies will be concentrated on fertilizer timing, especially yield year application to enhance second year crop.
- c. More efficient propagation techniques for increasing clonal stock will be investigated.
- d. The effect of ethrel on rhizome initiation will be studied.

MECHANICAL BLUEBERRY HARVESTING

Personnel:

Thomas E. Christensen

Mission of Project:

Develop a mechanical blueberry harvester that will reduce the cost of harvesting blueberries.

Specific Objectives:

Test blueberry harvester in several areas of the state to obtain performance data.

Status of Current Research:

Activity During 1975 Crop Season:

Kennebunk: Picked 3 days on poor ground, best picking rate was 0.5 acres/hr. at 1.3 mph ground speed. The berries were very close to ground and small on unfertilized field, only picked 60-70%. Best picking rate was 12 boxes/hr.

Union: Very few berries, heavy straw in fields clogged head. (This was just after hot Saturday in July and berries were dried up.)

Deblois: Heavy sweet fern growth, land smoothed and sand filled. Picked a little over 1 acre in 4 hours, berries picked - 300 lbs/acre.

Cherryfield: Picked on Cherryfield ridge 1 day, small berries went through 1/4" tooth spacing of head and were not picked. Could not pick more than 50% due to small berries.

Observations:

- a. The drive train gave no problems this year.
- b. The larger diameter brush did a more complete job of cleaning the picking head.
- c. Heavy straw and vegetation still will clog the head. Roots and woody stems will stick between the picking teeth and are very difficult to remove.
- d. Bent teeth were not as big a problem this year as in the past.
- e. Weed and brush free fields that are fairly level needed for harvester use.

Remaining Problems:

- a. Teeth spacing conforming to the berry size of season.
- b. Left hand skid on picking head passing through unpicked area and destroying some berries.
- c. Proper spacing between head and skids.
- d. Cleaning head when used in weed and brush conditions.

Impact of Research:

A prototype harvester has been developed that will pick berries when conditions are ideal. Economics and the lack of sufficient weed free and smooth terrain preclude practical use of harvester at this time.

Research Plans for 1976:

No further development planned at this time.

BLUEBERRY MARKETING AND COST ANALYSIS
OF PRODUCING BLUEBERRIES

Personnel:

Homer B. Metzger, Amr A. Ismail

Mission of Project:

To develop economic information useful to the blueberry industry and potential growers in making management decisions about producing and marketing blueberries.

Specific Objectives:

1. To determine the feasibility of marketing fresh blueberries.
2. To make a cost analysis of practices used in producing and harvesting blueberries.

Status of Research:

This is the third year of a three year project in which experimental marketing of fresh berries was conducted during two seasons (1973, 1974) and management practices and costs of producing berries were obtained for the 1974 crop. Results of the 1973 marketing operations have been published and results of the 1974 operations (with 1973 comparisons) are at the printer.

A progress report on management practices and cash costs of producing blueberries, released in 1975, has been revised and will be published soon. Detailed costs and returns information from 27 growers is being processed, with some preliminary results tabulated and analyzed.

Significant Research Accomplishment:

Significant cost variables, operating procedures and local market potential for fresh berry packaging and distribution have been identified. Labor costs and transportation expenses are critical factors influencing profitable operations.

Cash costs of blueberry production are influenced largely by yield per acre with costs ranging from 21 cents per pound for growers with yields averaging 300 lbs per acre to 12 cents per pound for growers with yields averaging 2,000 lbs per acre. Preliminary results for 1974 indicate that total costs of production (including wages for operator and family labor, and interest on investment) amounted to 57 cents per pound for yields of 200 lbs per acre, 30 cents for 600 lbs per acre, and 21 cents for 1,200 lbs per acre.

Impact of Research:

Growers contemplating local fresh market operations will find the results useful in planning. Reasonably good opportunities exist for grower families to supplement income through local fresh berry sales.

Growers and others will have a better indication of total production costs and costs of management practices when results of the cost study are released. The necessity of high yields per acre for a profitable blueberry production will be evidenced.

Research Plans for 1976:

None planned.

NEW FOOD PRODUCTS AND SERVICE

Personnel:

Ruth H. True, Assistant Food Scientist, Department of Food Science, UMO. Howard Y. Forsythe, Jr., Associate Professor of Entomology, Department of Entomology, UMO.

Mission of Project:

To evaluate the effect of pesticides and processing procedures on blueberry quality.

Specific Objectives:

To obtain data as required by FDA for the registration of pesticide materials for use on blueberries.

Status of Current Research:

The flavor of untreated and Imidan-treated blueberries was evaluated by a sensory panel of 39 judges. The samples were presented in a randomized complete block design of eight replications. The untreated control sample was served as a labeled reference standard for comparison with the coded control and the Imidan-treated berries.

Significant Research Accomplishment:

No significant flavor difference was found between the untreated control and the Imidan-treated blueberries at the 5% probability level of detection. Imidan 50-WP applied at the rate of 2 lb formulation /A showed no association with off-flavors or flavor impairment of lowbush blueberries.

Impact of Research:

Data will be available as one of the requirements for registration of Imidan 50-WP.

Research Plans for 1976:

The effect of Terbacil (Sinbar 80% WP) on the flavor of blueberries will be assessed by a sensory panel. In cooperation with: Amr A. Ismail.